

REMARKS

As a preliminary matter, Applicant requests the Examiner to acknowledge Applicant's claim for foreign priority and receipt of the certified copy of the priority documents filed on December 26, 2001.

Claims 1-15 are pending in the application. Applicant has added new claims 13-15. Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Naya et al. (U.S. Patent No. 5,875,032) ("Naya") in view of Aiki et al. (U.S. Patent No. 4,480,325) ("Aiki"). Applicant has added new claims 13-15 to more particularly claim the invention and to submit the following arguments to traverse the prior art rejections.

Applicant's invention relates to a sensor which utilizes attenuated total reflection, such as a surface plasmon sensor which enables quantitative analysis of a specific material contained in a specimen by utilizing generation of surface plasmon, in an embodiment. In the embodiment, a thin film is formed on a face of a dielectric block and in contact with the specimen. A semiconductor laser unit with an optical system injects the light beam into the dielectric block so that the light beam is incident on a boundary between the dielectric block and the thin film at a plurality of angles of incidence to provide a condition of total internal reflection. A light detecting unit measures the intensity of the light beam totally reflected from the boundary. A quantitative analysis of the specimen is possible through a curve of the angles of incidence and the measured intensity.

Naya relates to a surface plasmon sensor. Aiki relates to an optical pickup wherein a semiconductor laser device for projecting a laser beam onto an optical disc is driven by current sources. The optical pickup is disclosed as being suitable for use in an information playback

apparatus for optically reproducing information. Significantly, Aiki relates to noise effects caused by light reflection from the medium to the semiconductor laser resonator. The reflection produces modal variation. Col. 3, lines 6-15.

Contrary to the Examiner's assertions, Applicant respectfully submits that independent claims 1, 5, and 9 are patentable. Applicant submits that Aiki is not analogous art and that the Examiner has failed to establish a prima facie case of obviousness. In the Office Action, the Examiner states that Naya does not teach imposing a high frequency component on the driving current of the laser. The Examiner, however, alleges that it would have been obvious to use the purportedly known noise reduction laser driving arrangement to drive the laser of the device shown in Naya to obtain the reduction in noise taught by Aiki.

Applicant respectfully submits that Aiki is a nonanalogous art to the Applicant's invention and cannot be correctly used as a basis for a § 103 rejection. M.P.E.P. 2141.01(a). Aiki relates to optical pickup devices used for reading information off optical discs. Col. 2, lines 30-33. Optical discs may be video optical discs or audio discs. Col. 1, lines 15-19. Typically, such devices measure the intensity of the light reflected from the surface of the optical disc and the vertical distance between the optical pickup and the disc affects the intensity of the reflected light. Col. 4, lines 21-33. On the other hand, the present invention relates to a surface plasmon sensor and the Aiki reference is not from the same field of invention. The Specification discloses that in a surface plasmon sensor, the intensity of the light reflected by the metal film 12 is determined by the excitation of surface plasmons at the boundary between a metal film and a specimen and an angle of incidence of the light. Page 21, lines 5-17. Based on the relationship between the angle of incidence and the intensity of the reflected light, a quantitative analysis of

the specific material contained in the specimen is possible. Page 21, lines 5-17. The vertical distance components of the optical medium in Aiki are unrelated to the angular detection relevant in plasmon sensors. Thus, not only are the teachings of Aiki structurally different from the Applicant's invention, the function of reading information off optical discs as taught by Aiki, is entirely different from performing quantitative analysis of a specimen.

Applicant submits that the one skilled in the art would not have used the optical pickup taught by Aiki to drive the light source 14 of Naya. In Aiki, noise is caused by the variation in distance between the semiconductor laser of an optical pickup and a disc. Col. 4, lines 21-27. To suppress the fluctuation of output power and reduce the noise, Aiki teaches driving the semiconductor laser from two current sources, including a high-frequency current source. In Naya, however, there is no motivation for suppressing noise in the manner suggested by Aiki because the structural features of Aiki which generate the noise, i.e., the variation in distance, is not present in Naya. To the contrary, Naya teaches an entirely different device wherein the intensity of the light reflected in total reflection depends on the angle of incidence. Col. 2, lines 53-62. Thus, there is no motivation to incorporate the semiconductor laser as taught by Aiki into the teachings of Naya.

As for the Examiner's purported motivation, it is observed that the noise effects in Aiki result from a reflection of light incident on a perpendicular relative to the medium surface which is bounced back towards the laser. In contrast, the total internal reflections in Naya would not lead to these reflective effects as a noise source. Therefore, the Examiner's motivation is not supported.

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Claims 2-4, which depend from claim 1, claims 6-8, which depend from claim 5, and claims 10-12, which depend from claim 9, are patentable for at least the reasons submitted for claim 1.

Alternatively, or in addition, claims 3, 7, and 11 are patentable because the references fail to teach, suggest, or provide motivation for a wavelength selection unit which selects a wavelength of the portion of the light beam, in combination with other elements of the claims.

Alternatively, or in addition, claim 9 is patentable because the references fail to teach, suggest, or provide motivation for an optical waveguide layer, in combination with other elements of the claim. Rather, Naya merely teaches a semicylindrical prism 10 and a metal film 12.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


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